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Testimony of
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Chairman Graham, Chairman Reilly, and Members of the Commission, thank you for the opportunity to present these remarks. I am Stan Senner, Director of Conservation Science, for Ocean Conservancy.

In this role, it is my responsibility to enhance the organization's science capacity and link that capacity to advocacy of policies that promote conservation and sustainable uses of the ocean. Since the BP oil disaster, I have spent most of my time trying to understand and interpret the impacts on natural resources of this oil spill, especially with respect to the Natural Resources Damage Assessment process, meeting with affected persons and decision-makers, and laying ground for Ocean Conservancy's engagement in the long-term restoration work that will follow in the Gulf coastal region. In doing so, I draw on nearly seven years of working on the *Exxon Valdez* oil spill, first as Restoration Program Manager for the State of Alaska prior to the settlement with Exxon and then as Science Coordinator for the state-federal *Exxon Valdez* Oil Spill Trustee Council following the settlement.

I have been asked to highlight several aspects of the *Exxon Valdez* experience that are relevant and useful with respect to restoration in the Gulf of Mexico following the BP oil disaster. I am pleased to be invited to be here today on this panel for that purpose. I offer these comments to you as a biologist and restoration planner, and not as an attorney.

As I discuss these *Exxon Valdez* examples, I will make reference to proposed legislation that pertains to restoration in the Gulf of Mexico, and I will close with Ocean Conservancy's vision for the key elements of a comprehensive restoration program in the Gulf of Mexico.

The President's Commitment

When President Obama addressed the nation from the Oval Office on June 15, he stated:

> Beyond compensating the people of the Gulf in the short-term, it's also clear we need a long-term plan to restore the unique beauty and bounty of this region. The oil spill represents just the latest blow to a place that has already suffered multiple economic disasters and decades of environmental degradation that has led to disappearing wetlands and habitats. And the region still hasn't recovered from Hurricanes Katrina and Rita. That's why we must make a commitment to the Gulf Coast that goes beyond responding to the crisis of the moment.

Ocean Conservancy has worked for more than two decades to protect and restore depleted fish and wildlife resources in the Gulf of Mexico, and we enthusiastically support the President's call for a Gulf Coast Restoration Plan[1] that addresses decades of environmental degradation that have compromised the Gulf of Mexico coastal and marine ecosystem.

There are many physical and biological differences between the Gulf of Mexico and the northern Gulf of Alaska (including Prince William Sound), and there are great differences between the characteristics of the BP oil disaster in 2010 and the *Exxon Valdez* oil spill in 1989. The *Exxon Valdez* oil spill was the best studied spill event in the history of the United States, if not in the world. Although there was immediate and dramatic harm, the full story of impact and recovery from the *Exxon Valdez* played out over two decades and in some ways is not yet complete.

My expectation is that it will take several years before we have some clarity about the nature, scope, and severity of harm from the BP oil disaster and its impacts—especially given that so much of this story unfolded under water and out of sight. Now is an appropriate time to look ahead to a Gulf of Mexico restoration program. As you do so, I strongly encourage you to be mindful that, while restoration can and must begin now, many of the critical questions about the impacts of the BP oil disaster will not be answered for several years. Given the nature and scope of the BP disaster and the several states and multiple interests involved, conducting the Natural Resources Damage Assessment

[1] Throughout my statement, the "Gulf Coast Restoration Plan" refers to the plan called for by the President.

(NRDA) and developing and implementing a comprehensive Gulf Coast Restoration Plan will be every bit as challenging as capping the Macondo well in the Gulf of Mexico proved to be.

NRDA and the Restoration Plan

The goal set by the President goes beyond a typical NRDA-based restoration plan. As a result, development of a broader Gulf Coast Restoration Plan raises the question of the relationship between NRDA-based restoration and a broader program that seeks to reverse decades of environmental degradation. Ocean Conservancy's view is that NRDA-based restoration is nested within and essential to the larger plan. By defining the set of actions that respond to the short- and long-term damage done by the BP oil disaster, the NRDA is a key building block in development of a broader Gulf Coast Restoration Plan. In turn, by addressing decades of environmental degradation in the Gulf, implementation of the broader plan will improve the efficacy of efforts to restore what was injured and lost due to the BP oil disaster. For example, it will be most effective to both restore an oiled marsh and protect it from harmful erosion. Hence, it makes sense for a Gulf restoration program to address oil-spill injuries as well as the systemic degradation that compromises the whole ecosystem. Restoration funds should be applied where they can accomplish the most for the long-term productivity and resilience of the ecosystem, including the fish and wildlife resources on which so many people in the Gulf rely for their livelihoods.

Of course, the NRDA is only one avenue through which the broader suite of restoration projects needed to fully restore the Gulf will be identified, and there already exist various restoration, management, and research and monitoring plans for the Gulf region.[2] To be effective, the Gulf Coast Restoration Plan should outline mechanisms for integrating existing natural resource restoration and management plans, aligning and guiding agency programs, and securing funding to support implementation.

Bills in both the House and Senate would establish a Gulf Restoration Task Force to facilitate the needed coordination. I note, however, that the State of Texas is not currently represented on the task force in S. 3763, the Restoring Ecosystem Sustainability and Protection on the Delta Act. If there is to be a region-wide Gulf Coast Restoration Plan and program—addressing oil-spill injury and reversing

[2] For example, Louisiana's Comprehensive Master Plan for a Sustainable Coast, the federal Louisiana Coastal Protection and Restoration Plan, Mississippi Coastal Improvement Plan, to name only a few.

decades of degradation beyond oil-spill injury—Texas must be part of it. Texas fishery resources may well have been impacted by the spill,[3] and the Texas coast is very much a part of the Gulf of Mexico ecosystem.

The *Exxon Valdez* Settlement and Restoration Program

The United States and State of Alaska settled their claims against Exxon for various criminal violations and recovery of civil damages resulting from the oil spill in October 1991.[4] Prior to that settlement, the Federal Government and State of Alaska carried out a series of damage assessment studies under the authority and framework of the Federal Water Pollution Control Act and Comprehensive Environmental Response, Compensation, and Liability Act, as supplemented by the National Contingency Plan and NRDA regulations. Although the governments did not elect to conduct a formal NRDA following the *Exxon Valdez* oil spill, the approach of the early, pre-settlement restoration planning[5] was generally guided by then current NRDA regulations which defined "restoration" or "rehabilitation" as "actions undertaken to return an injured resource to its baseline condition…."[6] However, the August 1991 Memorandum of Agreement and Consent Decree[7] resolving claims between the United States and the State of Alaska stipulated that the Trustees "…shall jointly use all natural resource damage assessment recoveries for purposes of restoring, replacing, *enhancing*, rehabilitating, or acquiring the equivalent of natural resources injured as a result of the Oil Spill and the reduced or lost services provided by such resources…"(emphasis added).

Enhancing Injured Natural Resources.— The late Governor Walter Hickel reportedly personally insisted on inclusion of "enhancing" in the definition of

[3] For example, there is westward transport of red snapper larvae across the Mississippi Delta in May, September and October, and impacts on those larvae due to the BP oil disaster may ultimately be manifest in Texas. (Johnson, D.R., H.M. Perry, J. Lyczkowski-Shultz, and D. Hanisko. 2009. Red snapper larval transport in the northern Gulf of Mexico. Transactions of the American Fisheries Society 138:458–470.)
[4] Memorandum of Agreement and Consent Decree, *United States and Alaska v. Exxon Corp.*, Nos. A91-082 CIV & A91-083 CIV (D. Alaska, filed Oct. 8, 1991).

[5] Restoration Planning Work Group. 1990. Restoration Planning Following the Exxon Valdez Oil Spill: August 1990 Progress Report. Alaska Departments of Fish and Game, Natural Resources, and Environmental Conservation; U.S. Departments of Agriculture, Commerce, and Interior; and the U.S. Environmental Protection Agency. Anchorage, Alaska.
[6] 43 CFR 11.14(11).
[7] Memorandum of Agreement and Consent Decree, *United States v. State of Alaska*, No. A91-081 CIV (D. Alaska, filed Aug. 23, 1991).

how restoration funds could be spent,[8] and I think this was a wise choice. In the case of the *Exxon Valdez*, baseline data were limited, which made it hard to prove harm definitively or establish benchmarks for evaluation of progress toward restoration. Inclusion of the word "enhancing" eliminated the potential argument that restoration funds could only be used to return injured natural resources (or lost or reduced services) to a poorly known pre-spill, baseline condition. Adding enhancement to settlement documents allowed the Trustees to focus on identifying and supporting actions that were beneficial to an injured natural resource—and the larger ecosystem—without having to invest significant energy splitting hairs about whether the proposed action would result in a return to, but not go beyond, an uncertain baseline condition for a specific resource in a dynamic environment.

Having the ability to enhance a resource in the tool kit also provided supplemental justification for a given restoration action and perhaps shortcircuited the need for difficult judgments concerning which of the standard restoration terms otherwise applied. For example, protection of forested upland habitats used by injured fish and wildlife could be justified as restoration measures to facilitate natural recovery from the effects of the spill. If that justification was not persuasive, however, those same actions also enhanced recreational opportunities for people who lived in or visited the spill-impacted region, and who perceived that the oil spill had compromised intangible values, such as wilderness qualities.

The concept of enhancement was especially useful as an underlying rationale for allocation of restoration funds to support long-term research and monitoring in the spill area. The Trustee Council found that such activities were necessary to support restoration and healthy functioning of the northern Gulf of Alaska-Prince William Sound ecosystem, which was injured by the spill. Although research and monitoring clearly can be justified as necessary to monitor the recovery of injured resources, the concept of enhancement obviated the need for arguments about whether there was continued justification to support research and monitoring activities as time after the spill event grew longer. One result of the Trustee Council's focus on the larger ecosystem, in addition to specific resources, was the Gulf Ecosystem Monitoring Plan (GEM).[9] GEM was

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[8] Hunt, Joe. 2002. Mission Without a Map: The Politics and Policies of Restoration Following the *Exxon Valdez* Oil Spill. *Exxon Valdez* Oil Spill Trustee Council, Anchorage, Alaska.

[9] Mundy, P. M. McCammon, and R. Spies. 1992. Gulf of Alaska Ecosystem Research and Monitoring Program (GEM): The GEM Program Document. *Exxon Valdez* Oil Spill Trustee Council, Anchorage, AK.

developed and approved as a permanent ecological research and monitoring program in the northern Gulf of Alaska supported by a revenue stream from restoration funds managed as an endowment. The following excerpt[10] from the executive summary of the GEM Program Document captures the rationale nicely:

> The knowledge and experience gained during years of biological and physical studies in the aftermath of the *Exxon Valdez* oil spill (EVOS) confirmed that understanding the sources of changes in marine resources and ecosystems requires putting those changes into an historical context. Toward this end, in March 1999 the Trustee Council dedicated approximately $120 million for long-term monitoring and ecosystem-based research within the area affected by the 1989 oil spill, which is generally the northern Gulf of Alaska (GOA), including Prince William Sound…. This new program is called the GEM (the Gulf of Alaska Ecosystem Monitoring and Research) Program, and its mission is to:
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> ***Sustain a healthy and biologically diverse marine ecosystem in the northern Gulf of Alaska (GOA) and the human use of the marine resources in that ecosystem through greater understanding of how its productivity is influenced by natural changes and human activities.***

Given the President's goal of addressing both the impacts of the BP oil disaster and decades of environmental degradation, we can have the greatest long-term benefit for the environment by having the ability to restore and enhance specific natural resource as well as the functions and health of the larger ecosystem. We would expect that habitat acquisition and protection, restoration of coastal wetlands, and marine research and monitoring activities along the lines of Alaska's GEM program will be part of such a program.

S. 3763 calls for creation of a Comprehensive Gulf Restoration Plan within 180 days of enactment, which should include projects "for the purpose of long-term conservation, flood protection, and restoration of biological integrity, productivity and ecosystem functions in the Gulf Coast ecosystem." These purposes go well beyond a typical NRDA-based restoration program, but would

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[10] Mundy, P. M. McCammon, and R. Spies. 1992. Gulf of Alaska Ecosystem Research and Monitoring Program (GEM): The GEM Program Document. at pg. ES-1. *Exxon Valdez* Oil Spill Trustee Council, Anchorage, AK.

seem to be covered under the concept of enhancement as described above. Given the nature of the BP disaster, much of which occurred offshore, it is critically important that the "Gulf Coast ecosystem" fully include the marine part of the Gulf of Mexico.[11] We also think it may be unwise to pre-establish that priority is given to "projects, programs, and activities authorized by Title VII of the Water Resources Development Act of 2007…" If a multistate, Gulf-wide task force is to develop a comprehensive science-based restoration plan, then that task force and process should set priorities for the plan.

Focus on Injured Natural Resources.—By the terms of the *Exxon Valdez* settlement, restoration funds could only be spent on injured publicly-owned natural resources and the reduced or lost services provided by such resources. This approach established important sideboards on the use of restoration funds. For example, building community infrastructure unrelated to injured natural resources and lost services was not allowed, nor was funding of social services, such as treatment of substance abuse or responding to domestic violence. While such needs were meritorious and significant in the aftermath of the *Exxon Valdez*, restoration funds had to be spent on natural resources and the services they provided.

In the aftermath of the BP oil disaster there is need in the Gulf region to respond to many important human needs, including lost income due to the oil spill and clean up; some of these needs will be addressed through private claims and other sources. However, funds for natural resource restoration should be dedicated solely to restoration of natural resources harmed and services lost due to the spill or due to the systemic degradation that has compromised the productivity and functions of the Gulf ecosystem. From the standpoint of the public, it is important to be clear from the outset about what can and cannot be done with such funds. If false expectations are created or if the eligibility of certain actions for funding is ambiguous, it will undercut public support and lead to disillusionment.

Joint Use of Funds.—Although funds from Exxon for criminal restitution were divided between the United States and Alaska, the $900 million obtained through the civil settlement was jointly held and allocated by a state-federal Trustee Council. Indeed, all decisions among the six Trustees had to be

[11] In S. 3763, the Gulf Coast Ecosystem includes state waters but only offshore waters impacted by the explosion and blowout. We suggest including all state and federal waters in the Gulf of Mexico.

unanimous. This approach ensured that the restoration program was balanced in addressing the interests of and needs identified by the various state and federal trustee agencies. It reduced the potential that any one agency, government, or interest would dominate the restoration agenda, and ensured that the program was fully endorsed by all trustees. In addition to joint, unanimous decisions by the Trustees, the Trustee Council staff was a professional staff who worked for the Trustees as a group, rather than representing the interests of individual agencies or governments, and all recommendations were subjected to external peer review. In combination, this approach ensured balanced, science-based decisions and promoted development of a holistic, integrated—rather than piecemeal—restoration program.

Looking to the situation in the Gulf, the likely engagement of multiple states and agencies within states adds greatly to the complexity of decision making. Requiring unanimous decisions by restoration trustees may or may not be practical, but requiring a super majority for joint decision-making would be appropriate. Ocean Conservancy strongly favors development of an integrated, science-based restoration plan that is Gulf-wide in scope, and this cannot be achieved if restoration funds are simply allocated to individual states, or to the federal government. Impacts from the spill and from decades of environmental degradation are not confined to particular political jurisdictions and addressing them effectively requires an approach that is region-wide, systemic, and ecological.

Unanticipated Injury and the Reopener Clause.—It is our hope and expectation that studies designed to determine the nature, scope, and severity of harm from the BP oil disaster will be comprehensive, ecologically-oriented, and sufficiently long-running to detect subtle, delayed, and unanticipated injuries. Although the NRDA is not intended to be a long-term research program, we must continue field and lab work as long as is necessary to determine the nature and extent of the harm. This is essential to telling the full story of impact and recovery and ensuring fully compensatory restoration.

Two points in the *Exxon Valdez* settlement relate to this issue. First, the settlement explicitly provided for allocation of funds for the purpose of continuing to assess injury resulting from the oil spill and to plan, implement, and monitor the post-spill restoration program.[12] Second, the settlement contained a reopener

[12] Memorandum of Agreement and Consent Decree at pg 10, *United States and Alaska v. Exxon Corp.*, Nos. A91-082 CIV & A91-083 CIV (D. Alaska, filed Oct. 8, 1991).

clause "for unknown injury," which afforded the opportunity for the governments to come back to Exxon with a claim for an additional $100 million in restoration costs to address injuries which could not have been reasonably anticipated at the time of the settlement.[13]

It is essential that any kind of NRDA claim, settlement or other agreement pertaining to restoration following the BP oil disaster have some version of a reopener clause. The *Exxon Valdez* experience shows that the full extent of injury from a spill event may not be evident for many years after its conclusion. In the case of the Gulf of Mexico, which involved a massive quantity of oil—released deep under water and far offshore—it is even more likely that effects will be subtle, chronic, and delayed in appearing. This is all the more reason to ensure there is opportunity to reopen the issue of compensation for the costs of restoring what was harmed by the spill without a burden of proof that will make such restoration far more difficult. Based on my experience with the reopener language in the *Exxon Valdez* settlement, any reopener clause for the BP spill should set the evidentiary threshold at a more reasonable level and should establish a process for resolving disputed claims.

Public Participation.—The *Exxon Valdez* Memorandum of Agreement between Alaska and the United States required "meaningful public participation in the injury assessment and restoration process, which shall include establishment of a public advisory group…"[14] Even before the settlement, the governments established a Restoration Planning Work Group and carried out a significant outreach and consultation effort aimed at gathering suggestions for restoration projects from the public. The planning team's work was not made easier by the fact that prior to the settlement, the results of the government's damage assessment studies, conducted separately from Exxon, were held entirely confidential. Hence, the public was invited to offer suggestions about restoration without being told any details about injuries. As the state co-chair of the restoration planning team, I can report that people were angry and dismayed and many of them could not understand the rationale for secrecy, notwithstanding possible impacts on the strength of the governments' legal case against Exxon. Nonetheless, throughout the life of the *Exxon Valdez* restoration program, pre- and post-settlement, there was a thorough and even aggressive

[13] Memorandum of Agreement and Consent Decree at pg 18, *United States and Alaska v. Exxon Corp.*, Nos. A91-082 CIV & A91-083 CIV (D. Alaska, filed Oct. 8, 1991).
[14] Memorandum of Agreement and Consent Decree at pg. 11. *United States v. State of Alaska*, No. A91-081 CIV (D. Alaska, filed Aug. 23, 1991).

process for public participation that had a strong impact on the program, such as highlighting the importance of and support for habitat acquisition and protection as a restoration tool.

In the Gulf of Mexico situation, Ocean Conservancy advocates maximum public transparency consistent with maintaining the governments' ability to obtain funds for a fully compensatory restoration program. To date, the governments have lacked a discernable strategy and process for public communications about injury caused by the spill or even about the studies which are being undertaken to determine injury. Going forward, it is essential that public communications about damage assessment studies and findings and about restoration planning be given higher priority.

In the Senate, S. 3763 does not mention public participation in the restoration planning process beyond calling for public comment prior to completion of a restoration plan within 180 days of enactment. It will be difficult for a restoration task force to convene and organize itself and do all the other things necessary to produce a comprehensive restoration plan—including provide for meaningful public participation—in that time frame. While we share a sense of urgency to get restoration underway, Ocean Conservancy encourages a longer schedule and an explicit provision for fully including the public in the process. In the House, H.R. 3534, the Consolidated Land, Energy, and Aquatic Resources Act of 2009, includes a Citizen Advisory Council and calls for a restoration plan proposal within 9 months. That timeline seems more appropriate than 180 days.

Regional Citizens' Advisory Councils can be another tool to facilitate meaningful public participation and encourage industry accountability. There are two such committees in Alaska: one for Prince William Sound and one for Cook Inlet. Both councils were required by the Oil Pollution Act of 1990.[15] The councils are supposed to negotiate funding from the oil and gas industry—up to $2 million and $1 million annually (adjusted for inflation) for the Prince William Sound and Cook Inlet councils, respectively. The Prince William Sound council has had better success at obtaining steady funding at a significant level, while funding has been more of a struggle for the Cook Inlet council. Annually negotiating funding can be awkward, especially if the citizens' advisory council is highlighting what may be difficult issues involving oil and gas activities at the same time as it is negotiating annual support. Ocean Conservancy strongly

[15] Oil Pollution Act of 1990, Title V, Prince William Sound Provisions, Section 5006, Funding; 33 U.S.C. 2736.

endorses full public participation in restoration planning and implementation, and we believe that the concept of a citizens' advisory council, funded by the industry on a required basis, can be an effective model.

Scope and Content of a Restoration Program.—Following the *Exxon Valdez* oil spill, there was relatively little that could be done, practically and feasibly, in the way of direct, hands-on restoration from spill-related injuries. In fact, the general approach to restoration following the *Exxon Valdez* was necessarily passive: The aim was to prevent further harm to injured resources (including protection of habitats on which injured species relied), thereby facilitating natural recovery, and to continue surveys and research in order to monitor recovery and gather information to improve long-term management and conservation.

In the Gulf of Mexico there may be a wider array of restoration options available, including various active hands-on projects, and the context is different in that the President has asked for a Gulf Coast Restoration Plan that goes beyond spill impact to also address decades of environmental degradation. At the outset, it will be important to think more broadly about restoration and perhaps to begin the planning by considering the legacy that will be left following the conclusion of the restoration program. In the case of the *Exxon Valdez*, that legacy was protection of fish and wildlife habitats and provision of public access through acquisition of lands in the upland watersheds surrounding the spill-impacted area, as well as tremendous improvements in long-term management and conservation of marine resources in Prince William Sound and the northern Gulf of Alaska through an investment in science. As described below, these two elements would also be appropriate parts of the legacy following the BP oil disaster in the Gulf of Mexico.

Vision for Restoration in the Gulf

What will be the legacy following the BP oil disaster? Although we are still learning about the injury to the Gulf of Mexico ecosystem,[16] we anticipate release of a report on restoration in the Gulf to the President from Secretary of the Navy Mabus in the near future. Hence, it seems appropriate and timely to articulate Ocean Conservancy's vision for a Gulf Coast Restoration Plan.

[16] The NRDA is only in the pre-assessment phase, and we have heard very little about the results of literally many dozens of early damage assessment studies.

The U.S. Gulf of Mexico coastal and marine ecosystem—a region of tremendous biological diversity and productivity—is the sum of many interlinked parts, including offshore, nearshore, estuarine, freshwater, and terrestrial habitats. The Gulf is influenced by geologic, climatic, oceanographic, and biologic processes to produce a remarkable natural bounty. The Gulf accounts for a major share of U.S. fisheries and hundreds of thousands of jobs in the commercial fishing industry in addition to thousands of additional jobs and billions of dollars generated through tourism and recreational fisheries. Marine wildlife, such as dolphins, whales, seabirds, finfish, turtles, crustaceans, and untold species living on the seafloor, face an uncertain future in the aftermath of the BP oil disaster and the cumulative impacts of decades of environmental degradation.

Ocean Conservancy envisions a Gulf of Mexico ecosystem, including both its coastal and marine areas, that is fully restored to a healthy and resilient status, with its physical and biological processes intact, a full complement of native fish and wildlife resources present and abundant, and ample opportunity for sustainably managed human uses. In pursuing this vision, it is essential that the program be designed for the restoration and enhancement of:

- coastal wetlands, tidelands, estuaries, and barrier islands, which are fundamental to the health and productivity of the larger Gulf ecosystem;
- the marine environment, including its fish, shellfish, and wildlife resources; and
- the ecological and human services provided by the Gulf ecosystem.

The Gulf restoration program should include the following components:

- On-going Assessment of Injury and Recovery and Implementation of Restoration following the BP oil disaster

The full effects of the BP oil disaster on natural resources and ecological services may not be known for years to come, as was the case following the *Exxon Valdez* oil spill. To this end, there must be on-going funding to track injury and recovery from the oil spill and support planning for and restoration of injured natural resources and the reduced or lost services they provide. There also will be need to track the results of and evaluate restoration measures which have been implemented. Natural Resource Damage Assessment and post-NRDA studies, as well as other long-term research and monitoring activities (see below), will inform restoration activities and allow for adaptive management. To accomplish this objective, there should be a restoration account with monies obtained from

the responsible parties through the NRDA and it should be managed to provide a dedicated funding stream for an extended time. The *Exxon Valdez* experience suggests there is need to track injury and recovery and implement NRDA-type restoration activities for at least 25 years.

- Enhanced Assessment, Management, and Protection of Marine Species

Recovery from injuries to natural resources from the BP oil disaster, as well as from decades of environmental degradation, will require more intensive management and an investment in new tools, technologies, techniques, and information that will restore fisheries and protect marine wildlife. For example, following the *Exxon Valdez* oil spill in Alaska, restoration funds were invested in new ways of mass marking hatchery-reared salmon. This technological breakthrough enabled the commercial fishing fleet to continue harvesting hatchery reared salmon at times and places when the fishery otherwise would have been shut down to protect returning wild stocks. In the Gulf of Mexico, there is enormous need, but also opportunities, to achieve similar breakthroughs as we seek ways to better detect changes in the status of populations affected by the oil spill, evaluate responses to management actions, and reduce by-catch of non-target species. For example, increased fishery-dependent monitoring will enable fishery managers to ensure that management practices are consistent with long-term recovery and sustainable use of fishery and other resources. Other examples include development and use of more effective turtle-excluder devices or by-catch reduction devices for shrimp trawlers in the Gulf of Mexico, more selective fishing gear or practices for hook and line fisheries, and fuel-efficient hydrodynamic shrimp trawl doors and netting.

- Strategic Habitat Protection

Unique, rare, or otherwise biologically significant coastal and offshore habitats that may have been impacted by the oil spill or that may compensate for habitats impacted by the oil spill merit protection from past and future activities incompatible with sustainable fisheries and marine conservation. Protection of habitats will support resiliency of marine ecosystems and species and will support sustainable fisheries, tourism, and coastal economies. Effective ecosystem-based research and monitoring will lead to identification of important ecological areas at coastal or offshore sites for acquisition or protection. One form of protection is to regulate or designate key offshore areas to promote the recovery of depleted populations or habitats affected by the oil spill or other past and current activities. Another possibility is to designate new parks or expand

wildlife refuges to restore or enhance ecosystem services (e.g., water filtration) or human uses (e.g., recreation, beach access, hunting or fishing, tourism) affected by the BP oil disaster.

- Long-Term Monitoring of the Gulf Ecosystem

A large-scale event like the BP oil disaster should be the catalyst for efforts to improve understanding of how the Gulf's food web, fish and wildlife populations, and habitats are influenced by natural factors and human activities. To be effective, this must be done on an ecosystem or region-wide scale. Incorporating science, local and traditional ecological knowledge and public input, this effort should serve as a permanent diagnostic tool to detect changes in the marine ecosystem that will inform and enhance future management and conservation of this treasured ecosystem. A well designed and long-term program of ecosystem-scale research and monitoring will provide the means to evaluate whether we are successful at reversing decades of environmental degradation in the Gulf and identify whether adaptive changes in the Gulf Coast Restoration Plan are required. To accomplish this objective, there should be established a Gulf of Mexico Ecosystem Monitoring, Research and Adaptive Management Program modeled after Alaska's GEM program,[17] with the aim of understanding change in and sustaining a healthy, resilient and biologically diverse marine ecosystem in the Gulf of Mexico. This program should be supported through dedicated funds managed as an endowment, and it should be allowed to operate free of political interference, with appropriate accountability and oversight.

- Habitat Restoration, Management, and Enhancement

The condition and configuration of coastal ecosystems, such as wetlands, tidelands, oyster reefs, estuaries and barrier islands, can be improved to support a healthier, more productive marine environment while building coastal and community resilience to hurricanes. Effective ecosystem-based research and monitoring will lead to identification of necessary habitat enhancements. Existing plans containing pre-approved or vetted options for restoring coastal wetlands and upland and freshwater habitats should be consulted. Examples range from enhancing coastal submerged aquatic vegetation, which improves

[17] Approved by the *Exxon Valdez* Oil Spill Trustee Council in July 2002, but never implemented by subsequent Trustees, due to political changes in the Alaska Governor's Office.

fish habitat and reduces storm impacts on fragile coast lines, to large-scale changes in water management to maintain freshwater inputs to estuaries and coastal waters and provide sediments to rebuild marshes and wetlands. Improving water quality in the Mississippi River would reduce the size and duration of the hypoxic zone in the Gulf of Mexico. Large-scale habitat restoration will require very large sums of money over time, and is best carried out with a dedicated revenue stream generated from endowed funds.

Conclusion

The BP well at the Macondo drill site has now been capped, and we can turn our attention more fully to learning about and responding to the impacts of this oil disaster on the Gulf of Mexico ecosystem and on the people who live, work, and play on the Gulf coast. Ocean Conservancy anticipates and is an advocate for an aggressive science program to fully document impacts of and recovery from the BP oil disaster, no matter how long that takes. Ocean Conservancy expects and believes that the nation wants a comprehensive and fully compensatory restoration program, which makes the Gulf ecosystem and the people who depend on it whole again. We are heartened that the President has set the goal of responding not only to the impacts of the spill, but also to decades of environmental degradation.

Chairman Graham, Chairman Reilly, and Members of the Commission, thank you for the opportunity to present this testimony today. I hope that the insights I have shared from my experiences following the *Exxon Valdez* oil spill are relevant and helpful. I would be pleased to respond to your questions and to continue working with you and the Commission staff as you formulate your report and recommendations to the President.